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L3: Entry 1 of 4

File: DWPI

May 7, 1997

DERWENT-ACC-NO: 1997-247436

DERWENT-WEEK: 199723

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TITLE: Rail construction for bridges or viaduct - has bottom plate with rail bar construction connected to having safety rail and it forms trough shaped construction

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CODE

GELUN

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DESIGNATED-STATES: AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

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APPLICATION-DATA:

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EP 771908A1	October 30, 1996	1996EP-0203022	N/A
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ABSTRACTED-PUB-NO: EP 771908A

BASIC-ABSTRACT:

The safety rail is a bent part of the bottom steel or concrete plate extending to above the upper surface of the rail bar. The bottom plate is bent on either side of the rail bar construction. The rail bar construction is placed in a trough-shaped part of the bottom plate. The rail bar is embedded in Corkelast (RTM) and the bed of Corkelast (RTM) material is sealed with a sound-damping layer while leaving free an acoustic chamber.

The bent parts are covered with a sound-insulating layer. The cross-sectional surface of the part of the bridge or viaduct construction supports the bottom plate is chosen considerably larger than the cross-sectional surface of the bottom plate. Mastic material is arranged between the sound damping layer and the rail bar.

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ADVANTAGE - Reduces the labour cost in having fixing the structure using bolts, because this is now unnecessary.

CHOSEN-DRAWING: Dwg.2/6

TITLE-TERMS: RAIL CONSTRUCTION BRIDGE VIADUCT BOTTOM PLATE RAIL BAR
CONSTRUCTION CONNECT SAFETY RAIL FORM TROUGH SHAPE CONSTRUCTION

DERWENT-CLASS: Q41

SECONDARY-ACC-NO:

Non-CPI Secondary Accession Numbers: N1997-203945

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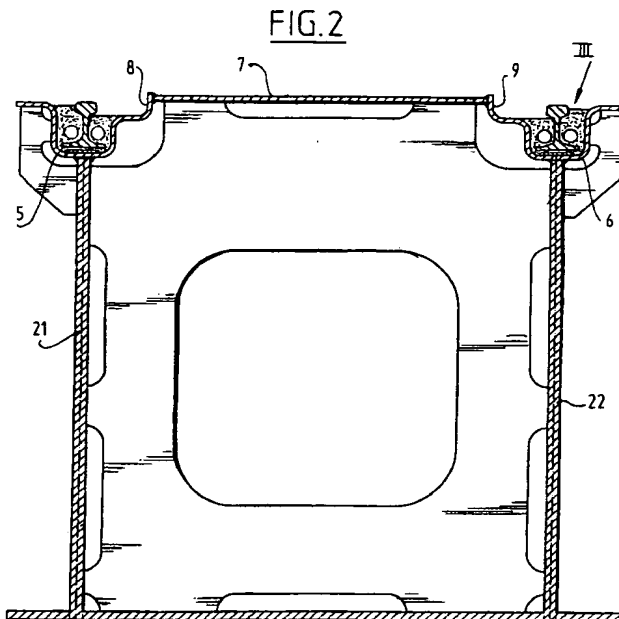
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(54) Rail construction, particularly for bridge or viaduct

(57) A rail construction intended particularly for bridge or viaduct comprises a bottom plate (4), a rail bar construction (10) connected to the bottom plate (4) and a standing safety rail (8,9) close to the rail bar construction (10) which is formed according to the invention by a bent part of the bottom plate (4) extending to above the upper surface of the rail bar (10). It is hereby possible to provide the bottom plate (4) with the safety rail in one operation. This results in a trough-shaped construction, which is favourable in respect of noise nuisance.



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Description

The invention relates to a rail construction, particularly for bridge or viaduct, with a bottom plate connected to the bridge or viaduct construction, a rail bar construction connected to the bottom plate and a standing safety rail close to the rail bar construction and running roughly parallel to the rail bar.

As seen in the height, a bridge or viaduct spans a part of for instance a river at a relatively deeper location or other part at a lower level. In order to obviate the danger in the case of a possible derailment of the railway carriages falling a great distance, safety rails are arranged which stand relatively high and prevent the carriage falling from the viaduct or bridge in the case of derailment.

Heretofore the safety rail has been fixed to the substructure using bolts. This requires much labour time, which makes this construction expensive.

From DE-A-12 41 476 a rail construction is known in which a plate is bended into a trough. At the upper-side of the trough a horizontal beam is welded to the trough serving as safety rail. The safety rail is horizontally directed and flush with the upperside of the rail bar.

From DE-A-42 42 077 a railway construction is known in which on both sides of the rail bar an acoustic damping layer is provided.

From EP-A-0 628 660 a rail bar construction is known according to which both sides of the rail bar are embedded in moldable material, for instance Corkelast®.

It is the object of the invention to provide a solution herefor. This is achieved according to the invention in that the safety rail is a bent part of the bottom plate extending to above the upper surface of the rail bar. According to the invention therefore the bottom plate is provided with the safety rail in one operation, which renders unnecessary the arranging of separate safety rails by means of bolts.

The bottom plate is preferably bent on either side of the rail bar construction.

In this manner it becomes possible to place the rail bar construction in a trough-shaped part of the bottom plate, which is favourable in respect of noise nuisance.

The rail bar is preferably embedded in Corkelast® and the bed of Corkelast® material is sealed with a sound-damping layer while leaving free an acoustic chamber. It has been found that the arrangement of a sound-damping layer on the Corkelast® considerably reduces production of noise.

According to another embodiment the bent parts are covered with a sound-insulating layer, which effects a further improvement in the noise nuisance.

In preference the cross-sectional surface of the part of the bridge or viaduct construction supporting the bottom plate is chosen considerably larger than the cross-sectional surface of the bottom plate.

It has been found that the noise radiation is considerably reduced by this step.

The rail construction according to the invention can be embodied with a bottom plate of steel or concrete.

The invention will be further elucidated with reference to the figures of an embodiment.

In the figures:

Fig. 1 shows a perspective view of a rail construction according to the invention,

Fig. 2 shows a sectional view of a rail construction according to the invention,

Fig. 3 shows a perspective view according to arrow III in fig. 2,

Fig. 4 shows a rail construction according to the invention with steps for noise reduction,

Fig. 5 shows a further embodiment of the invention, and

Fig. 6 shows yet another embodiment of the invention.

A support construction, for instance a frame construction or girder construction 3, is arranged on columns 1, 2. The girder construction or frame construction 3 supports a bottom plate 4 on which the actual rail construction is placed.

According to the invention the bottom plate 4 is formed by a part 5, 6 which is bent into the form of a trough and which can be of symmetrical construction. The parts 5, 6 are mutually connected via a plate 7 which is connected to parts 5, 6 by welding. It is also possible to form the parts 5, 6 and 7 integrally. The bent portion 8, 9 forms the safety rail. The rail bar 10 is embedded in Corkelast® material 11 while leaving clear cylindrical openings 12 and 13. The rail bar 10 lies on a plate 14 of sound-damping material. The combination of the Corkelast® material and the recessed placing of the rail bar provides considerable limitation of the noise production. A further improvement in noise production is obtained by covering the bent portions with plates 15, 16 of sound-damping material.

The cross section of the parts 21, 22 of the bridge or viaduct construction supporting the bottom plate 4 is chosen so as to be considerably larger than the cross sectional surface of bottom plate 4 and therefore of the bent parts 5, 6. Tests have shown that the sound radiation is hereby reduced considerably.

A still further improvement is obtained if the Corkelast® material is covered with a plate 18, 19 of sound-damping material while leaving free an acoustic chamber 17.

According to fig. 5 the support construction is embodied in concrete 20 while in the embodiment of fig. 1-4 the support construction is of steel.

Claims

1. Rail construction, particularly for bridge or viaduct, with a bottom plate connected to the bridge or viaduct construction, a rail bar construction connected to the bottom plate and a standing safety rail close

to the rail bar construction and running roughly parallel to the rail bar, **characterized in that** the safety rail is a bent part of the bottom plate extending to above the upper surface of the rail bar.

2. Rail construction as claimed in claim 1, **characterized in that** the bottom plate is bent on either side of the rail bar construction. 5
3. Rail construction as claimed in claims 1-2, **characterized in that** the rail bar construction is placed in a trough-shaped part of the bottom plate. 10
4. Rail construction as claimed in claims 1-3, **characterized in that** the rail bar is embedded in Corkelast® and the bed of Corkelast® material is sealed with a sound-damping layer while leaving free an acoustic chamber. 15
5. Rail construction as claimed in claims 1-4, **characterized in that** the bent parts are covered with a sound-insulating layer. 20
6. Rail construction as claimed in claim 1, **characterized in that** the cross-sectional surface of the part of the bridge or viaduct construction supporting the bottom plate is chosen considerably larger than the cross-sectional surface of the bottom plate. 25
7. Rail construction as claimed in claims 1-6, **characterized in that** the bottom plate is of steel. 30
8. Rail construction, **characterized in that** the bottom plate is of concrete. 35
9. Rail construction, **characterized in that** mastic material is arranged between the sound-damping layer and the rail bar. 40

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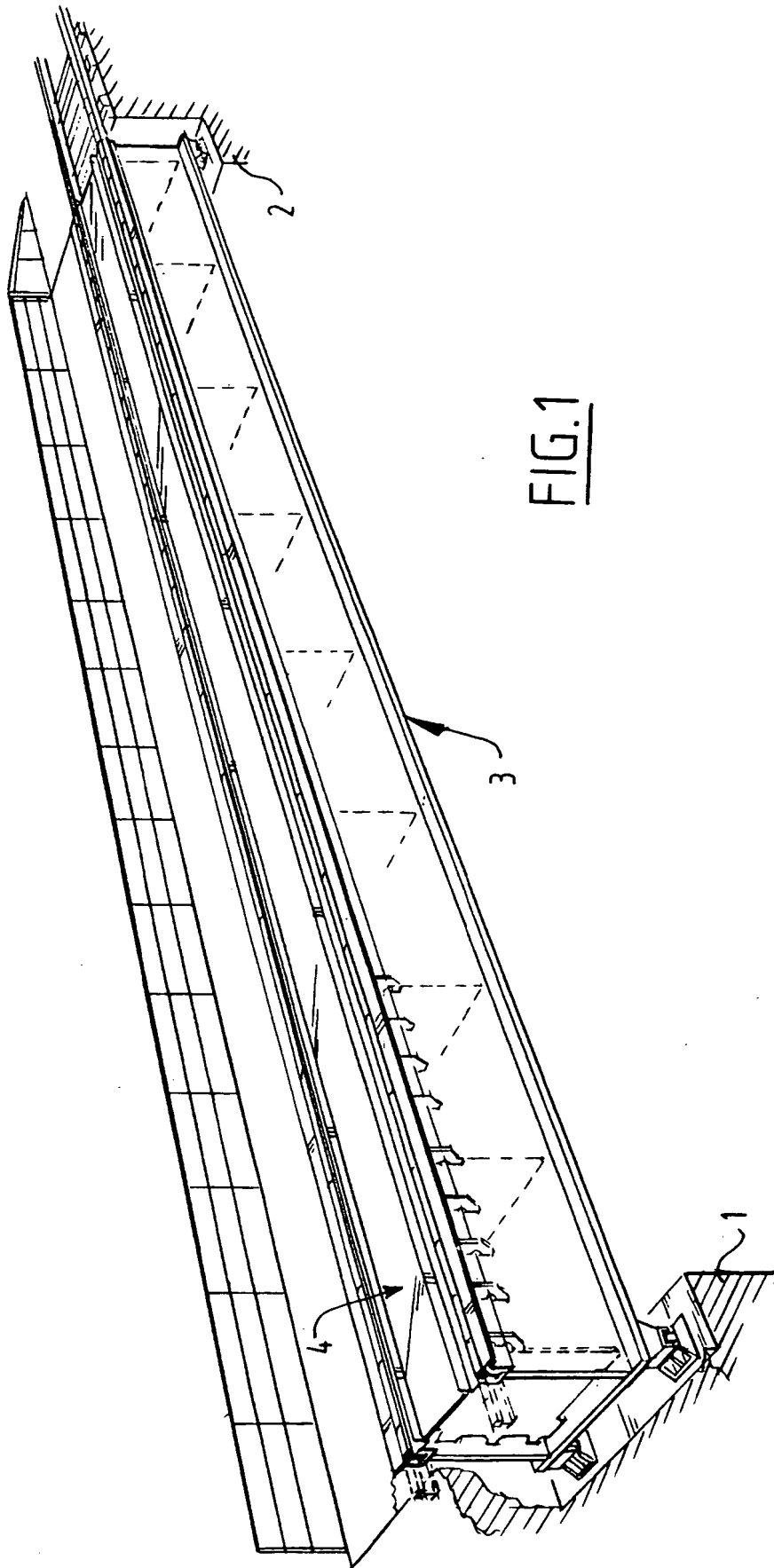


FIG.2

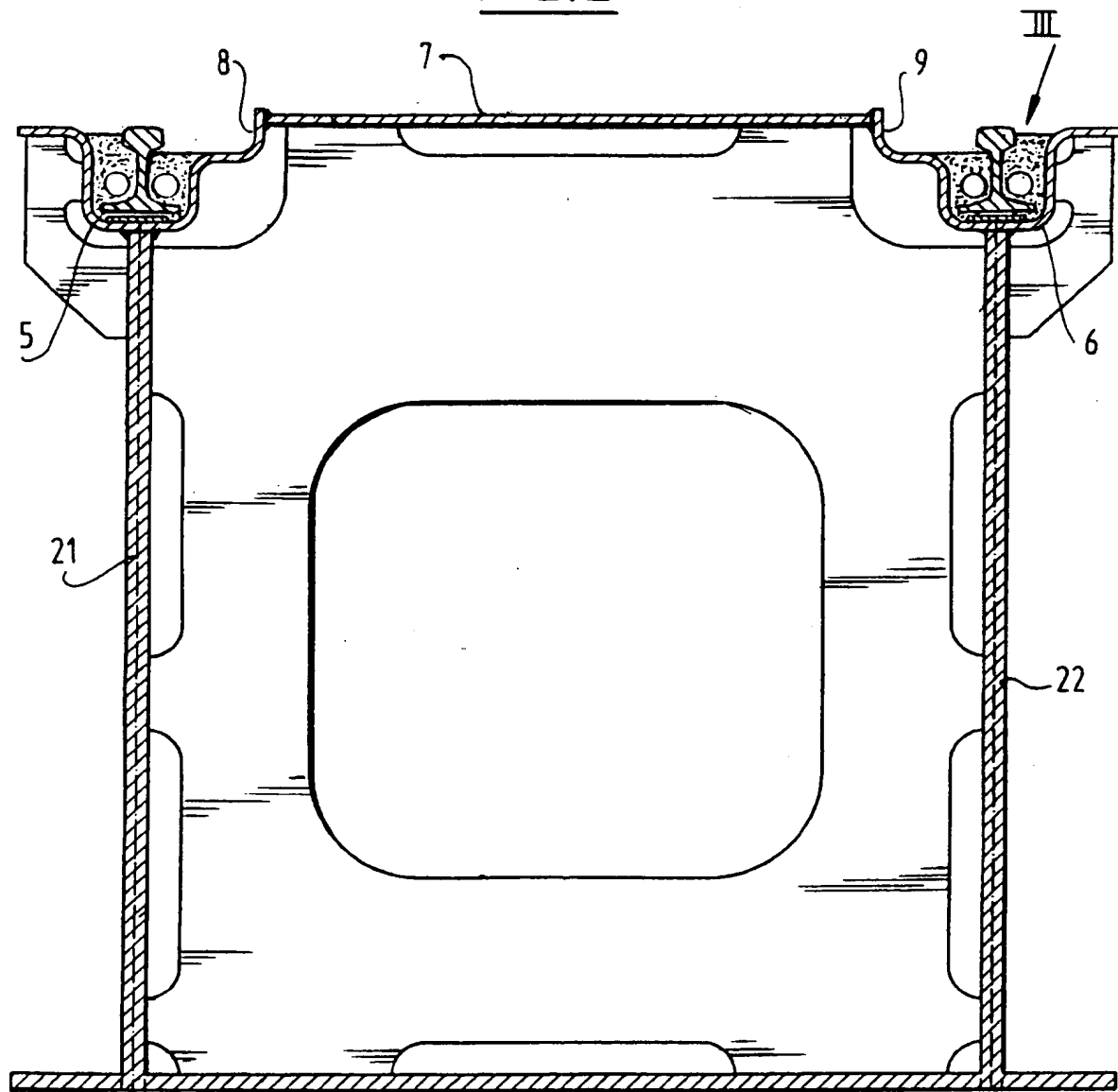


FIG.3

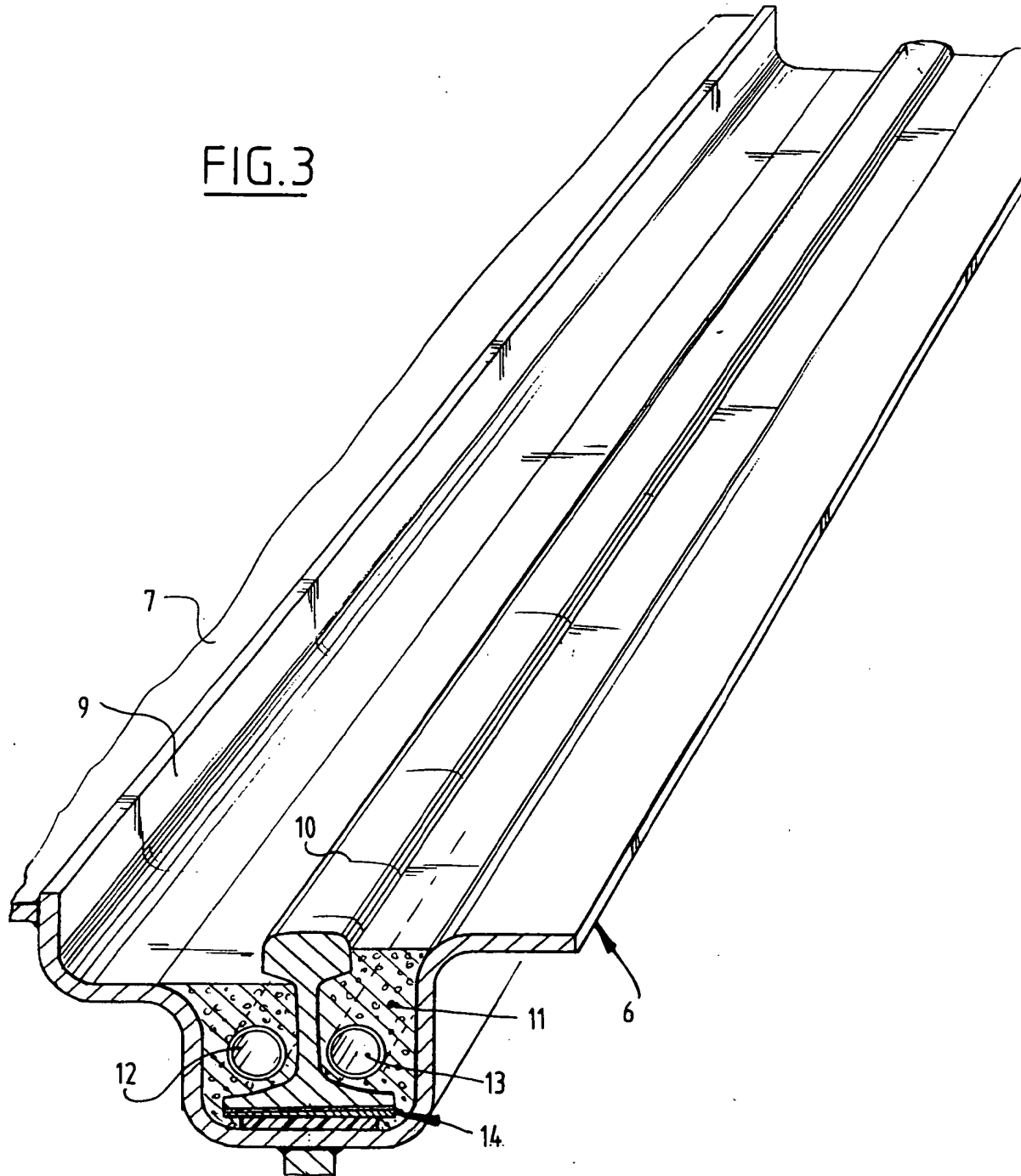


FIG. 4

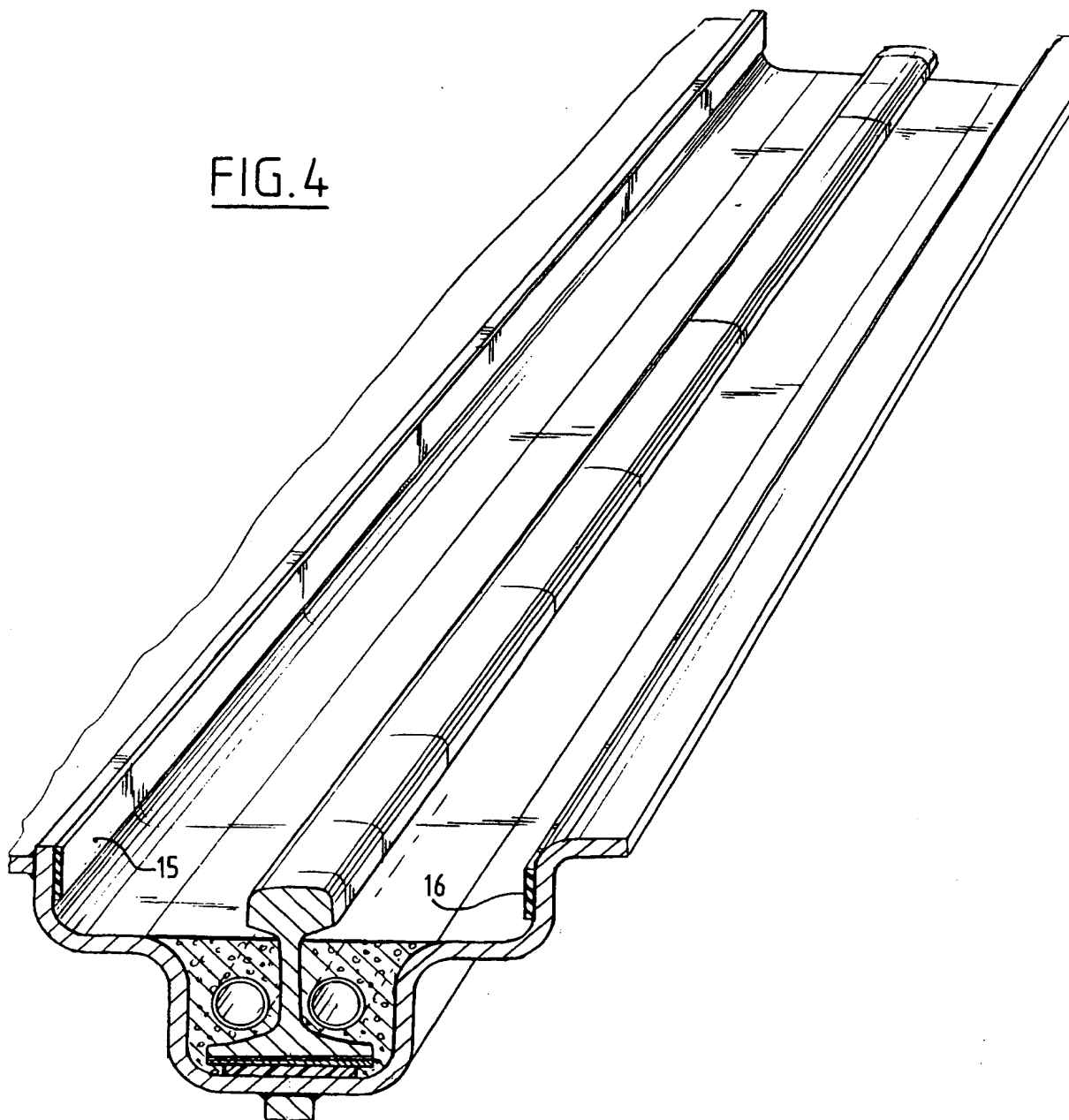


FIG.5

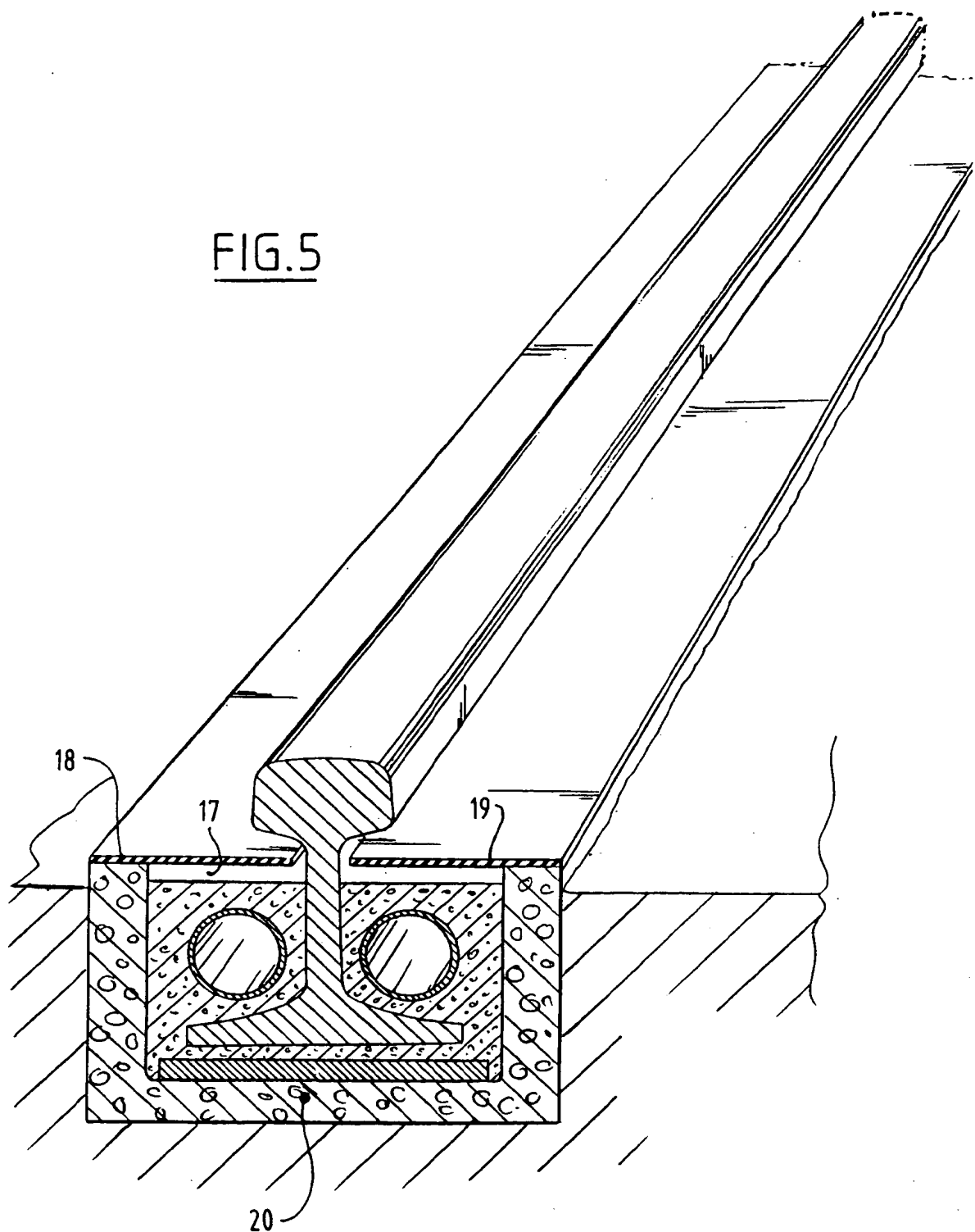
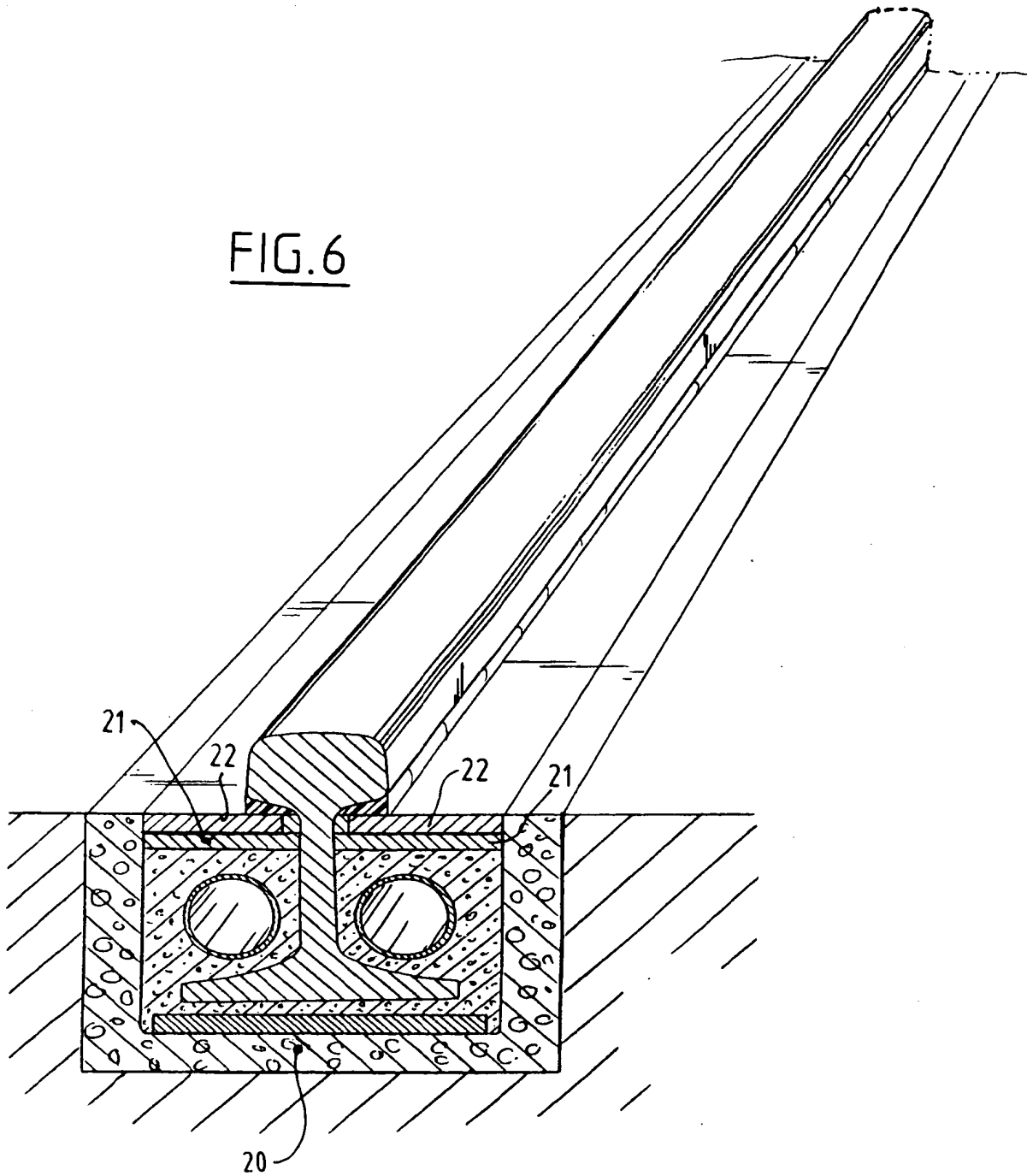


FIG.6





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 96 20 3022

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
D,X	DE-B-12 41 476 (RHEINSTAHL UNION BRÜCKENBAU AG.) 1 July 1967	1-3,7	E01B19/00
Y	* page 3, line 31 - page 4, line 24; figures *	4,5,9	E01B1/00
A	---	5,6	E01D2/04
D,Y	EP-A-0 628 660 (EDILON BV) 14 December 1994	4,9	
A	* the whole document *	1-3	
X	STRASSEN UND TIEFBAU, vol. 44, no. 7/8, 7 August 1995, ISERNHAGEN DE, pages 559-565, XP000195371 HAUCK ET AL.: "Untersuchungen zur Verringerung der Schallabstrahlung von "Festen Fahrbahnen" durch absorbierende Fahrbahnbeläge"	8	
A	* the whole document *	1-3,5	
D,Y	DE-A-42 42 077 (STUTTGARTER STRASSENBAHNEN AG) 3 June 1993 * claims; figures *	5	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
	-----		E01B E01D B66C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 4 December 1996	Examiner Blommaert, S
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

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